

DRAFT IMPACT SIGNIFICANCE THRESHOLDS REPORT

Initial Review Draft Report

August 27, 1996



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The CALFED Bay-Delta Program is a joint effort among state and federal agencies with management and regulatory responsibilities in the Bay-Delta. The Program involves significant public and "stakeholder" involvement, and seeks resolution of Bay-Delta problems by building consensus rather than fostering conflict.

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Initial Review Draft Report Impact Significance Thresholds Criteria CALFED Bay-Delta Program

INTRODUCTION

Several tasks must be completed by the CALFED Bay-Delta Program before the impact assessment for the Phase II Programmatic EIR/EIS can begin. One of them is the identification of potential categories of impacts and the investigation of thresholds at which impacts would be judged to be significant versus non-significant. The research, analysis, and preparation of this report commence that portion of this process.

OBJECTIVE AND PURPOSE

The objective of the Significance Thresholds task is to satisfy the California Environmental Quality Act (CEQA) requirement to determine the thresholds at which impact magnitudes constitute significant impacts. The purpose of this report is to document the thresholds that were selected, and identify why they are appropriate for use in the CALFED Bay-Delta environmental impact analysis. While not explicitly required by CEQA, this documentation will be an important component of the public disclosure process.

TASK DESCRIPTION

CEQA Thresholds Requirements

The California Environmental Quality Act (CEQA) Statutes and Guidelines defines a "significant effect on the environment" in Chapter 2.5, Section 21068, as "a substantial, or potentially substantial, adverse change in the environment" (Governor's Office of Planning Research 1995). The guidelines (Section 15382) define "significant effect on the environment" as: "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." However, neither CEQA nor the CEQA guidelines establish mandatory thresholds or levels at which an adverse impact is considered significant. Appendix G of CEQA provides a list of actions that might "normally have a significant effect on the environment," but use of these criteria are not mandatory, and CEQA thus allows the lead agency discretion in the selection, use, and application of significance criteria that are appropriate for the setting and circumstances of each project. Through the application of

CEQA, agencies and preparers of CEQA documents have established typical thresholds and evaluation criteria that frequently have been used to make findings of significance, and in some cases jurisdictions have adopted guidelines that should be applied to projects or actions subject to their review.

The Governor's Office of Planning and Research, in discussing the determination of and application of significance thresholds, notes that the "threshold of significance for a given environmental effect is simply that level at which the Lead Agency finds the effects of the project to be significant. Thresholds of significance can be defined as: A quantitative or qualitative standard, or set of criteria, pursuant to which the significance of a given environmental effect may be determined." (Governor's Office of Planning and Research 1994).

The advantage of establishing thresholds of significance for the CALFED Bay-Delta Program and subsequent projects is the consistency and predictability that this provides to the environmental impact analysis of alternatives and their components. Significance criteria should ideally be applied at both the programmatic EIR/EIS level as well as later project-specific EIR/EIS's. Given the breadth and complexity of the Bay-Delta Program, and the fact that it will be implemented over an extended time period, establishing and documenting significance criteria at the programmatic stage will provide a basis from which later environmental impact analyses can be drawn. If necessary, impact analyses can be revised to fit the circumstances at the time they are applied by a Lead Agency.

Determining CEQA Impact Significance Thresholds

The significance of an activity varies depending on the environmental setting in which the activity occurs. Thresholds of significance for a given impact may include flexible standards which recognize differences in the environmental setting. Thresholds also may be qualitative or quantitative. Some impact categories are subject to state or federal standards that serve as prescribed thresholds or ceilings of significance for the specific subject areas under any given sets of environmental conditions. However, other impacts must be dealt with qualitatively because they are too difficult to quantify and depend on different variables. Thresholds of significance for qualitative effects are general statements used to develop approaches which will assist in determining at which points potential project environmental effects are considered significant. The general nature of the planning and the broad range of settings and impacts involved with the Phase II Bay-Delta Program dictate the use of qualitative thresholds of significance at this, the programmatic stage. The thresholds can and will be made more definitive and more quantitative at the project specific level.

The first step to be taken at this stage in the identification of thresholds of significance was to determine the effects for which thresholds must be established. For the purpose of this document these determinations were based upon identification of resources that are likely to be affected by the actions identified in the programmatic EIR/EIS. The next step was

to gather and evaluate existing information relative to the chosen effects (i.e. reviews of recent Master Environmental Assessments, Environmental Impacts, Negative Declarations, and related environmental studies). These activities were carried out keeping two questions in mind: (1) At what point, or under what circumstances, was a given effect deemed significant?, and (2) Are there effective criteria by which to measure significance? Next, the identified criteria were grouped by broad issue or discipline (e.g., air quality, water quality, etc.). From these lists of documented criteria, those most applicable to the Bay-Delta program alternatives and components, and the types of impacts they might generate, were carried forward for consideration. This later list was then used as the set of criteria recommended for consideration by the CALFED Bay-Delta impact analysis team.

Application of Significance Criteria in the CEQA Review Process

It is important to note that the application of significance criteria in the CEQA review process mandates specific actions that the Lead Agency must complete. Thus the determination of significance should be carefully considered. Once an impact analysis has been completed and impacts documented as to their significance or non-significance, the Lead Agency documents these conclusions and the bases for the findings. Impacts that are determined to be significant must be considered for mitigation by the Lead Agency. If mitigation can be applied that reduces the level of effect below the established significance threshold, then the impact is categorized in the EIR/EIS as one that can be mitigated to a non-significant level through the application of mitigation measures. These mitigation measures must be adopted by the lead agency or included in the project. If no practicable or feasible mitigation is available to reduce the impact to a level of non-significance, then the impact is considered significant and unavoidable. The Lead Agency must prepare and adopt findings that demonstrate why the impact is unavoidable and, if the project is to be approved, the findings must include the agencies' reasons for making a finding of "overriding" considerations in approving a project with unavoidable adverse significant impacts. All mitigation measures adopted by the Lead Agency must be included in a mitigation program or plan that is adopted at the time the project is approved.

NEPA Guidance

The National Environmental Policy Act (NEPA) does not have the same mandatory finding of significance as does CEQA, but the Act does discuss how significance of impacts can be defined in terms of context and intensity (NEPA Section 1508.27). In considering context, the action must be analyzed under several contexts such as society as a whole, the affected region, any notable interests and issues, and the locality. Consideration of context means that the setting of the proposed action should be taken into account. Intensity refers to the severity of the impact.

IMPACT SIGNIFICANCE THRESHOLD CRITERIA

The preceding general introduction and background sections are followed by the compilation of previously-utilized significance threshold criteria. This section describes the review that was undertaken of significance thresholds that have been used in previous EIR/EIS's, or have been defined by agencies for use in impact assessments. At the conclusion of the review for each environmental resource area, thresholds proposed for use in the programmatic EIR/EIS are listed.

Environmental Impact Reports and other environmental documents pertaining to water resource projects were reviewed from the Department of Water Resources, U.S. Bureau of Reclamation, Department of Fish and Game, Association of Bay Area Governments, Sacramento Area Council of Governments, Sacramento Public Library, and environmental consulting companies familiar with the Bay-Delta system. In addition, a review was performed on CEQA guidelines compiled by local jurisdictions in California. These guidelines include thresholds of significance for each CEQA criterion identified by the specific jurisdiction. Additional documents which contain methods to determine thresholds of significance were obtained from the California State Office of Planning and Research. A comprehensive list of documents from the above sources is included in Appendix A.

The documents reviewed were screened and prioritized to identify those with thresholds of significance which are the most applicable to the CALFED Bay-Delta Program Phase II Programmatic EIR/EIS. In the review, priority was placed on documents that were: programmatic, water resource-related, less than five years old, and applicable to California. Documents that did not meet all of these criteria were used only if they contributed substantially to the determination of threshold values. For example, various documents older than five years were selected because they were water resource related, programmatic, and dealt with issues similar to those under consideration by the CALFED Bay-Delta Program. Some project-specific EIR/EIS's were utilized because they dealt with the significance issue in useful detail whereas most programmatic documents did not.

The significance thresholds are organized by environmental resource and impact categories. Each resource and impact category corresponds with a category that is expected to be addressed in the programmatic EIR/EIS.

After the compilation of significance thresholds was completed, significance thresholds were developed for the Bay-Delta programmatic document. The methodology used to formulate proposed thresholds involved the following considerations:

Thresholds Should Be Qualitative

Because the Phase II Bay-Delta document will be programmatic, little or no site-specific quantitative data will be included. Therefore, thresholds are phrased in qualitative terms indicating potential changes from either baseline (existing or historical) conditions or future conditions under the No Action Alternative. These comparisons provide indications of the potential for significant impacts for use in the programmatic EIR/EIS. These qualitative and general thresholds would provide the basis for the establishment of more specific or qualitative thresholds in the project-specific Phase III, EIR/EIS's. At the time when specific actions are identified, thresholds may be expressed in quantitative terms based on site-specific data and existing or baseline conditions.

Thresholds Should Be Applicable to Anticipated Actions and the Study Area

Each threshold needs to address the actions and components as identified for the No Action Alternative, Alternatives I-III, the Common Programs, and the Core Actions within the overall study area identified for the programmatic document.

Consolidation of Threshold Subjects

Many of the compiled thresholds were too redundant or too specific to be useful, e.g., single or multiple locations, species or facilities. Therefore the attempt was made to consolidate threshold subjects as much as possible, keeping in mind the fact that the programmatic document will need to address broad categories of impacts in the Bay-Delta and larger geographic areas at only a general level of detail.

Thresholds Apply only to Adverse Impacts

As stated in Section 15382 of the CEQA Guidelines "Significant effect on the environment" means a substantial, or potentially adverse change in any of the physical conditions.....

Thresholds are Linked

Changes in physical variables such as those that determine or influence air quality and water quality are typically only of importance if they lead to environmental or economic impacts. Therefore, the proposed thresholds for physical variables are stated as changes in some measurable variable, e.g., channel flow or channel velocity and then cross referenced to the environmental or socio-economic resources that could be affected, for example:

- Change in channel flow or velocity (see also the fisheries and aquatic habitat categories).

Under the resource heading for fisheries, a separate entry might be:

- Changes in channel flows or velocities leading to changes in the amounts of nursery habitats available for fish spawning and/or rearing.

SIGNIFICANCE THRESHOLDS FOR ASSESSMENT VARIABLES

A compilation of significance thresholds is provided below for each resource topic based upon review of existing CEQA and NEPA documents. This is followed by the proposed thresholds for each resource topic.

Water Resources

Background

For the purposes of reviewing significance thresholds, the resource topic Water Resources was subdivided into the following broad subcategories:

- Water Management, Operations and Supply Opportunities
- Hydrology and Hydrodynamics
- Water Quality

The impact assessment variables listed in the Draft "Proposed Assessment Variables with Supportive Variables" (PAV) of August 7, 1996 were incorporated within these subcategories in the following manner (the numerical index corresponds to that of the Draft PAV outline):

- Water Management, Operations and Supply Opportunities includes: I.B. (Water Management, Facilities, and Operations).
- Hydrology and Hydrodynamics includes: I.A. (Surface Water Hydrology), I.C. (Groundwater Hydrology), I.D. (Riverine Hydraulics), and I.E. (Bay-Delta Hydrodynamics).
- Water Quality includes: I.F. (Water Quality).

Water management and operations issue areas include the general topics of water supply opportunities and consumptive uses within and related to the Delta, its watershed and service areas, and specifically how proposed facilities and operations could alter the quantities and timing of water available for beneficial uses (e.g., domestic water supplies, instream flows for fish, and refuge water supplies).

Hydrology includes the general topics of the water cycle and movements of water in the environment. Variables of concern to the CALFED Bay-Delta Program include runoff,

evapotranspiration, stream flows, and groundwater sources. Hydrodynamics primarily addresses relationships among channel geometry and water velocities, depth and stage; and the mixing, circulation or stratification of waters of different densities caused by differences in temperature and salinity.

The resource topic of water quality includes consideration of key water quality variables (constituent concentrations and other water quality characteristics e.g., temperature, and dissolved oxygen and organic carbon concentrations). Thresholds of significance obtained from existing EIR/EIS's generally address key water quality variables as they relate to maintaining beneficial uses of Bay-Delta and contiguous waters. In general, where numerical water quality objectives or standards have been established to protect beneficial uses, violations of the limits are considered to be significant impacts. For constituents with established numerical limits to protect beneficial uses it is often assumed that additional benefits are attainable by maintaining water quality conditions that are better than the numerical limits. In these cases, thresholds may be expressed as concentrations in percentages of the specified water quality limits, (e.g. 90% of the maximum concentration permitted by the standard), or a percentage change from baseline conditions, (e.g. reduction or improvement of baseline conditions by 20%). For other water quality characteristics or criteria that cannot be predicted quantitatively (e.g., excessive biostimulation potential or malodor), qualitative thresholds are sometimes applied. These are often based on observed fluctuations and professional judgments.

As with all other resource categories, a significance threshold must be measured as an adverse change compared to a baseline condition or alternative future (e.g., the No Action Alternative). In the case of water resources, the baseline conditions used for impact assessments of the proposed alternatives and their components may vary considerably. For example, alternatives may be compared against historical, existing, or future conditions. For this study, use of the year 2020 as the future planning horizon was assumed to describe the ultimate future level of development. Thus populations and water demands are projected for the year 2020 in both the watersheds and export service areas. In the context of this future condition, historical years or sequences of hydrology may be simulated (e.g. 1934 - 1995). Impacts may then be compared with historical, existing, and future conditions.

Review of Existing CEQA and NEPA documents

The following significance thresholds were extracted during the review of CEQA and NEPA documents that were picked according to the previously described selection criteria. Letter references are keyed to the source documents (see Appendix A, Bibliography):

Water Management, Operations and Supply Opportunities

- An increase in Delta lowland evapotranspiration exceeding 1% of the No-Project Alternative evapotranspiration from Delta lowlands (J)

Hydrology and Hydrodynamics

Surface Water Resources:

- Increase of inflow to the Delta and increased diversion during summer or early fall to accommodate storage withdrawal or storage refill (A)
- Entitlement transfers of surface water and corresponding conversion from agricultural to urban use (A)
- Increased Delta diversions if water contractors sell water to contractors who receive water from Delta Diversions (A)
- Surface water spreading basins leading to habitat removal and creation (A)
- Change in percent of years when Sacramento River July mean monthly temperatures equal or exceed 60°F at Red Bluff (with temperature curtain) (B)
- Change in constituent concentrations (B)
- Changes in Sacramento River instream flows (annual averages) below Keswick in critically dry years (% change from 2020 baseline conditions) (B)
- Changes in Claire Engle Reservoir storage in critically dry years (% change from 2020 baseline conditions) (B)
- Changes in Shasta Reservoir storage in critically dry years (% change from 2020 baseline conditions) (B)
- Changes in flow to surface waters via return flows/drainage (C)
- Changes in Folsom Reservoir storage in critically dry years (percent change from 2020 baseline conditions) (D)
- Changes in American River instream flows (annual averages) below Nimbus in critically dry years (percent change from 2020 baseline conditions) (D)
- Changes in Delta outflow, pulses, and cross-Delta flow (measured as a transfer coefficient) (E, F)
- Increase in reverse flow August-November (E, F)
- Changes in channel velocity (E, F)
- Changes in channel water levels (F)
- Temporary interruptions of surface drainage during construction activities (G)
- Changes in stream flow leading to increases or decreases in aquatic habitat (I)
- Changes to or construction of new storage facilities that would create larger pools of cold water or would change the temperature of releases to a conveyance system (I)
- Changes to water levels in storage facilities that would affect aquatic or wetland habitat (I)

- Substantial exceedances of local flows over historical flows or increase in channel velocities over a scouring threshold of approximately 3 fps, or reduction of local stages compared to historical stages (J)
- Substantial increase in average net channel flows above historical net channel flows during Delta wetlands (DW) operations (J)
- Increases in salinity (EC) during months with applicable EC objectives (J)
- Changes to the direction, magnitude, and velocities of flows in Montezuma Slough (L)
- Changes to the quantity of fresh water consumed within Suisun Marsh (L)
- Changes in monthly and annual Delta Outflow (M)
- Changes in Delta outflow surges (M)
- Changes in channel velocities, scour and siltation (M)
- Changes in cross channel flows and levee setbacks (M)
- Changes in tidal currents in Delta channels (M)

Groundwater Resources:

- Sold entitlement water could be replaced with groundwater aggravating ongoing overdraft primarily in the southern San Joaquin Valley (A)
- Changes in 2020 groundwater storage (B)
- Changes in groundwater quality (B)
- Refuge groundwater overdraft (B)
- Changes in flow to groundwater via return flows/drainage (C)
- Changes in total drainage flow (C)
- Potential for interruption of or contamination of groundwater where construction activities contact groundwater (G)
- Increase in impounded water forming a hydraulic obstruction that would hinder drainage of up-slope soils (H)
- Withdrawal of water from a groundwater storage basin such that withdrawals exceed recharge over an extended period of time (I)
- Land subsidence as a result of groundwater extraction (I)
- Decline in groundwater levels such that nearby water users are required to lower wells, construct new wells, or lower pump bowls in wells (I)
- Change in surface water flows caused by groundwater pumping (I)

Water Quality

- Changes in operation within the Bay-Delta leading to changes in cycling of surface elevation of downstream reservoirs (e.g. Lake Perris, Castaic Lake) thus affecting TDS, odor and taste (A)
- Changes in TDS to surface waters via return flows/drainage (C)
- Changes in discharge of boron to surface waters via return flows/drainage (C)
- Changes in discharge of selenium to surface waters via return flows/drainage (C)
- Changes in total drainage flows (C)

- Changes in percent of years when American River November mean monthly water temperatures at Nimbus equal or exceed 60°F (D)
- Reductions in total dissolved solids, chlorides, bromides and trihalomethane formation potential (THMFP) (E, F)
- Temporary decrease in water quality of surface water affected by construction (G)
- Increased potential for fuel spills to surface water during construction activities (G)
- Decreased water quality associated with return waters from temporary diversions (G)
- Change in flood flow discharge containing waterborne asbestos (H)
- Groundwater extraction causing poorer quality water to migrate to wells and surrounding groundwater (I)
- Elevated dissolved oxygen concentrations (DOC) in Delta exports (J)
- Changes in other water quality variables in Delta channel receiving waters (J)
- Potential contamination of stored water by pollutant residues (J)
- Any violation of applicable Delta water quality objectives (J)
- Salinity (Chloride) increase in Delta exports (J)
- Increases in water temperature beyond the range of 56-62°F in the Sacramento River (K)
- Changes in the number of miles of stream impacted by water temperature (K)
- Changes in dissolved oxygen (K)
- Changes in river turbidity (K)
- Changes in dissolved oxygen or in phytoplankton growth rate within the Suisun Marsh (L)
- Modeled change in waterborne channel salinity and the interface between fresh and salt water (L)
- Changes to levels of dissolved oxygen and temperature in Delta Channels (M)

Proposed Thresholds of Significance

Water Management, Operations and Supply Opportunities

- An increase in average annual net evapotranspiration
- Reductions in opportunities to provide water supplies for beneficial uses at appropriate locations and times and in adequate quantities (see also aquatic and estuarine habitat, fisheries, and economics)

Hydrology and Hydrodynamics

Surface Water:

Adverse changes in:

- Monthly and annual Delta outflows (see also aquatic and estuarine habitat and fisheries)
- Delta outflow surges or pulses (see also aquatic and estuarine habitat and fisheries)
- Channel water levels, flows and velocities (see also fisheries, aquatic habitat, geomorphology and soils)
- Delta Cross Channel flows (see also fisheries and aquatic habitat, and geomorphology and soils)
- Tidal currents in Delta channels (see also geomorphology and soils, aquatic habitat, and fisheries)
- The incidence or velocities of net reverse flows (see also fisheries)
- Timing, magnitudes, or net diversions from Delta (see also fisheries)

Groundwater:

- Groundwater withdrawals exceeding amounts recharged over an extended period of time (groundwater mining)
- Declines in groundwater levels adversely affecting pumpers and other water users (see also economics)
- Adverse changes in surface water flows caused by groundwater pumping changes
- Increases in impounded waters forming hydraulic obstructions to drainage of up-slope soils

Water Quality

- Violations of applicable Bay-Delta water quality objectives for surface waters (economics, health, habitats, fisheries)
- Adverse changes to DO, DOC, turbidity or other variables that may not have specific or applicable water quality standards (see also economics, public health and fisheries)
- Degradation of groundwater quality caused by excessive groundwater extractions, contamination, or other causes (see also economics and public health)
- Temporary decreases in water quality caused by construction activities or intermittent diversions
- Adverse changes in the temperatures of waters released from storage facilities (see also aquatic habitat and fisheries)
- Adverse changes in salinities and the interface between fresh and salt water, especially in the vicinity of the entrapment zone (see also economics, fisheries)
- Total dissolved solids (salinity), Chloride and Bromide concentration increases in Delta exports (see also economics, public health)

Biological Environment

Background

Several subcategories are included under the resource topic "Biological Environment" for consideration when evaluating the potential for impacts of the Bay-Delta Program alternatives. Therefore, this section is divided into the following broad subcategories (the numerical index corresponds to that of the Draft PAV outline):

- Wetlands and Terrestrial Habitats includes: Riparian (II.D), Wetland (II.D), Upland, and Agricultural Habitats (II.D)
- Fishery Resources (II.C)
- Aquatic Habitat includes Riverine and Estuarine (II.A and II.B)
- Plants and Wildlife (II.E)

The background related to each biological category is described below, in general terms.

Wetlands and Terrestrial Habitats

These are important habitats because they provide water, plant cover used for protection, and abundant food sources. Habitats such as riparian and upland areas are used for nesting and foraging by migratory bird species. These habitats are protected under the Migratory Bird Treaty Act. Riparian habitats in particular have diminished greatly from their original extent in California and are considered a community of special concern by the Department of Fish and Game. Other habitats are protected by ordinances enacted by local and state jurisdictions.

Wetlands are considered "waters of the United States" and as such, are regulated under Section 404 of the Clean Water Act. The types of wetlands of concern in the Bay-Delta region include artificial and natural vernal pools, ephemeral drainages, drainage swales, wet meadows, riparian forest-thickets, seasonal wetlands and tule-cattail marsh.

Fishery Resources

All species that comprise the valuable fish fauna of the Bay-Delta are important. However, this subcategory primarily addresses those species that are most sensitive to environmental changes in the system, species declining in population which are protected by regulatory agencies, and species that are important to sport or commercial fisheries. The Bay-Delta species most often considered to fall into these categories include: chinook salmon, striped bass, American shad, Delta smelt, Sacramento splittail, and longfin smelt.

Aquatic Habitat (Riverine and Estuarine)

This category addresses habitats which support the identified fish species of concern and other members of the food web in the affected aquatic environments. Both riverine and estuarine habitats are addressed. Many of the variables identified in the PAV outline cannot be quantified at this programmatic stage, e.g., areas of suitable spawning habitat, areas of shallow tidal habitat less than 1m, less than 2m, etc. Therefore, the thresholds selected at this stage for the programmatic analysis are more general and refer to the potential for reduction in important habitat variables.

Plants and Wildlife

This section covers special status plants and wildlife species protected by state or federal regulations and their supporting habitats.

Review of Existing CEQA and NEPA documents

Wetlands and Terrestrial Habitat

- Impacts to sensitive plant communities and populations (A, G)
- Removal of trees (A, G)
- Impacts to habitats that support special status wildlife and aquatic species (A, G)
- Impacts to habitats that support migratory bird species (A, G)
- Changes in Sacramento River riparian communities (B, C, D)
- Potential impacts on tributary riparian communities beyond 2020 baseline conditions (number of miles potentially affected) (B, C, D)
- Potential impacts on terrestrial communities beyond 2020 baseline conditions (number of acres potentially affected) (B, C, D)
- Changes in refuge wetland acres from 2020 baseline conditions (B, C, D)
- Decreases in bermed island habitat (E, F)
- Reduction of flooding that impact Valley Oak riparian forest and wetlands habitats (E, F)
- Impacts deemed significant according to quantified analysis using the Habitat Evaluation Procedures (HEP) (F)
- Cessation of water diversions from pasture lands that reduce habitat available to some sensitive wetland plants (I)
- Decrease in wetland habitats (I)
- Decreases in freshwater marsh and exotic marsh habitats (J)
- Decreases in riparian and permanent pond habitats (J)
- Decreases in upland and agricultural habitats which support the nesting and foraging of wildlife species (J)
- Loss of upland habitats (J)
- Loss of jurisdictional wetlands (J)
- Loss of jurisdictional emergent wetland and riparian habitats (J)
- Losses of riparian and permanent pond habitats (J)

- Losses of upland and agricultural habitats (J)
- Losses of jurisdictional wetlands on reservoir islands (J)
- Losses of riparian wetland habitat (J)

Fishery Resources and Aquatic Species

- Impacts on Sacramento River chinook salmon spawning, rearing, and entrainment (B)
- Impacts on Trinity River chinook salmon (B)
- Impacts on fisheries in Shasta and Clair Engle Reservoirs (B)
- Impacts to chinook salmon migration routes (C)
- Impacts on introduced warm-water species (C)
- Impacts on native warm-water species (C)
- Impacts on American River chinook salmon spawning and rearing conditions (D)
- Impacts on American River shad fishery (D)
- Impacts on Folsom Reservoir fishery (sunfish spawning success) (D)
- Increased direct impacts to resident and non-resident species (>1%) (E)
- Annual reductions in striped bass yearly equivalent losses (E)
- Increased mortality to salmon smolts and striped bass eggs, and larvae from cross-Delta flows (E)
- Increases in salmon and steelhead losses (measured by a fish loss model) from Delta Cross-Channel diversions (E)
- Changes in entrainment predation, handling and hauling losses for striped bass and chinook salmon (E)
- Increases in mortality to winter-run salmon as downstream migrants (E)
- Changes in salvage numbers of fish species (E)
- Changes in total direct losses as related to salvage estimates (E)
- Impacts to fish migration from construction of intake structures, barrier type facilities, and siphons (E)
- Increases in fish importation from water diversions and water transfers (G)
- Stream flow changes with the potential to dewater chinook salmon redds (I)
- Changes in entrapment losses (predation, screening efficiency, handling and tracking) resulting from changes in diversions and pumping schedules (I)
- Induced reverse flows resulting in increased entrainment and lowered survival of larval, juvenile, or adult fish (I)
- Changes in Delta land fallowing resulting in changes in stream-flow and fish survival (I)
- Changes in reservoir storage levels affecting the amount of suitable temperature water available for successful reproduction (I)
- Changes in stream-flows affecting the amount of spawning and nursery habitat for resident or migratory fish (I)
- Alteration of habitat for aquatic species (J)
- Potential increase in the mortality of chinook salmon resulting from the indirect effects of project diversions and discharges on flows (J)

- Reduction in downstream transport and increases in entrainment losses of striped bass eggs and larvae, Delta smelt larvae, and longfin smelt larvae (J)
- Increases in entrainment losses of juvenile American shad and other species (J)
- Increases in entrainment losses of juvenile striped bass and Delta smelt (J)
- Changes in percentage of fall chinook escapement (K)
- Changes in percentage of late fall chinook escapement (K)
- Changes in percentage of winter chinook escapement (K)
- Changes in percentage of spring chinook escapement (K)
- Changes in percentage of steelhead escapement (K)
- Changes in percentage of resident trout and other fish relative abundance (K)
- Percent change in temperature-related salmon mortality (modeled) for all life stages of chinook salmon (K)
- Delays to migrating steelhead from changes in flow and barriers (L)
- Changes to resident fish habitat (acres) (L)
- Changes or delays in migration (L)
- Added diversions of fish into interior sloughs and ponded areas (L)
- Changes (possible decreases) in Neomysis resulting from increased channel velocities and potential reductions of young striped bass (L)
- Reductions in phytoplankton populations due to shorter residence time (L)
- Delays in downstream migration of juvenile fish that result in increased predation (L)
- Changes in striped bass: spawning, young-of-year abundance, entrainment of juveniles, eggs, and larvae (M)
- Changes in salinity gradients and freshwater flows for migrating fish and maintenance of nursery areas, including net downstream flow (M)
- Changes in entrainment and losses for resident fish (measured as average annual salvage values) (M)
- Changes in overall food supply for fish (e.g. phytoplankton, Neomysis etc.) (M)
- Changes in spawning and nursery areas within San Francisco Bay resulting from reduced freshwater inflow (M)
- Changes in chinook salmon average annual direct entrainment and losses (mainly those from San Joaquin River) (M)

Plants and Wildlife

- Potential impacts on special-status species beyond 2020 baseline conditions (number of species potentially affected) (B)
- Violations of Endangered Species Act (E, F)
- Any adverse impacts on Sacramento splittail spawning caused by dredging activities (E, F)
- Increases in channel salinities in Suisun Marsh which affect composition and productivity of plant communities that are important food sources for waterfowl (E, F)
- Dredged contaminants in soils of channels that impact special status terrestrial or aquatic species (E, F)

- Increase in mercury in sediment, plants and water in habitats that support special status wildlife species (E, F)
- Increase of tributyltin in sediment in habitats that support special status wildlife (E, F)
- Fluctuations in reservoir elevations that impact special status plant species and high-quality habitat supporting wildlife (E, F)
- Increase or decrease in current salinity concentrations in pond areas where special-status wildlife and plants exist (E, F)
- Decreases in rice fields which support special status species (rice fields mimic natural wetlands) (I)
- Decreases in cereal grain crops which provide substantial portions of seasonal food requirements for both migrating and resident wildlife (I)
- Increases in agricultural fields that are plowed, burned or disced immediately after harvest which result in a decrease in diversity and density of wildlife (I)
- Reduction in foraging habitat for Swainson's hawk (I)
- Reduction of nesting habitat for greater sandhill crane (I)
- Increases in erosion of stream banks that contain sensitive plant communities (I)
- Losses of special-status plants and wildlife (J)
- Decreases in foraging and breeding habitats for special status wildlife species, e.g. wintering waterfowl, greater sandhill crane, Swainson's hawk, northern harrier, tricolored blackbird (J)
- Increase in waterfowl harvest mortality (J)
- Losses of special-status plants (J)
- Losses of foraging habitats for wintering waterfowl (J)
- Losses of habitats for upland game species (J)
- Losses of northern harrier nesting habitat (J)
- Losses of foraging habitat for greater sandhill crane (J)
- Losses of foraging habitat for Swainson's hawk (J)
- Losses of foraging habitat for Aleutian Canada goose (J)
- Losses of wintering habitat for tricolored blackbird (J)
- Temporary construction impacts on state-listed species (J)
- Potential for increased incidence of waterfowl diseases (J)
- Potential disruption of waterfowl use as a result of increased hunting (J)
- Increase in waterfowl harvest mortality (J)
- Potential changes in local and regional waterfowl use patterns (J)
- Potential effects on wildlife and wildlife habitats resulting from Delta outflow changes (J)
- Potential disruption of greater sandhill crane use of the habitat islands as a result of increased hunting (J)

Proposed Thresholds of Significance

Sensitive Habitats

Loss, reduction in area, or degradation of quality of:

- Riparian habitats
- Upland habitats which support the nesting and foraging of wildlife species
- Agricultural lands which support the foraging of wildlife species
- Jurisdictional wetlands (including freshwater and brackish water marshes)
- Wildlife refuge wetlands acreage
- Habitats which support migratory bird or other wildlife species (e.g. estuarine and riverine aquatic habitats)

Fishery Resources

- Changes in entrainment or salvage losses for all fish species of concern (including predation, screening efficiency, handling, trucking) resulting from changes in diversions and pumping schedules
- Induced reverse flows resulting in lowered survival of larval, juvenile or adult fish
- Changes in stream-flow affecting the amount of, or quality of, spawning or nursery habitats for resident or migrating fish
- Changes in salinity gradients and freshwater flows (net downstream flows) for migrating fish and their nursery areas
- Impacts to fish migration from construction of intake structures, barrier type facilities, and siphons
- Increased mortalities to salmon, striped bass, and steelhead from changes in cross-Delta flows
- Changes in migratory fish escapement
- Change in temperature-related mortalities for all temperature-sensitive fish

Aquatic Habitat (Riverine and Estuarine)

- Decreases in aquatic habitat due to changes in channel flow or storage/channel water elevations
- Decreases and/or degradation of aquatic habitat due to construction or expansion of operational facilities

Wildlife

- Take or direct loss of special-status wildlife species
- Loss or impacts to habitats which support special-status wildlife species

Plants

- Take or direct loss of special-status plant species
- Loss or impacts to habitats which support special-status plant species

Geomorphology and Soils

Background

This section covers any changes that may affect the current condition of soil and sediments in the Bay-Delta. These changes may include erosion, increases in soil and sediment contents, subsidence, and increases in geological hazards. These topics are similar to those in the draft PAV outline. Geomorphology and soil issues are important because they may contribute to changes in water quality, public health and the biological environment.

Review of Existing CEQA and NEPA documents

- Unstable lake level or lake banks that would result in erosion (A)
- Impacts that may impact local geologic or soil resources (A)
- Changes in soil salinity and boron levels compared to 2020 baseline conditions (B, C, D)
- Changes in soil drainage (B, C, D)
- Changes in subsidence (B, C, D)
- Decreases or increases in velocity may cause sedimentation (E, F)
- Increase or decrease in current salinity in pond areas that result in reduced habitat quality (E, F)
- Presence of toxins in channel dredge material that impact wildlife and water quality (E, F)
- Increase in the probability of slides (G)
- Increase in any geological hazard (G)
- Disruption of soils (G)
- Subsidence in stream banks (I)
- Increase in long-term levee stability on reservoir islands (J)
- Potential for seepage from reservoir islands to adjacent islands (J)
- Potential for wind and wave erosion on reservoir islands (J)
- Potential for erosion of levee toe berms at pump stations and siphon stations on reservoir islands (J)
- Oxidation of peat soil in the Delta that results in soil subsidence (J)
- Decrease in potential for levee failure on islands during seismic activity (J)

Proposed Thresholds of Significance

- Adverse changes in rates of sedimentation and erosion (see aquatic habitat)
- Releases of toxic materials from sediments or soil (see water quality and fisheries)
- Adverse changes in soil drainage (also see socioeconomics)
- Changes in subsidence (also see socioeconomics)
- Adverse changes in soil salinity (also see socioeconomics)
- Decreases in levee stability (also see public health and safety and socioeconomics)

- Potential for undesirable seepage from reservoir islands to adjacent islands (also see socioeconomics)
- Increased potential for wind and wave erosion (also see socioeconomics)
- Oxidation of peat content in soil (also see socioeconomics, water quality, public health, and biological resources)
- Increase in potential for levee failure on islands during seismic activity (also see socioeconomics and public health and safety)
- Increase in the probability of erosion and slides (also see socioeconomics and public health and safety)
- Increase in the potential for geological hazard (also see socioeconomics and public health and safety)
- A disruption of soils (e.g. soil horizons or soil compaction)

Public Health and Safety

Background

This section addresses conditions that affect the health and safety of the public. These conditions include an increase in mosquito habitats, any potential geological hazard, and any interference with emergency response plans or emergency evacuation plans. Other conditions that may impact the public are an increase in other disease vectors such as ticks, or exposure to hazardous materials.

Review of Existing CEQA and NEPA documents

- Increase in groundwater recharge resulting in an increase in mosquito habitat (A)
- Increase in mosquito abatement levels on the habitat islands and during partial-storage, shallow-storage, or shallow-water wetland periods on the reservoir islands (J)
- Increase in potential exposure of people to wildlife species that transmit diseases (J)
- Increase in mosquito abatement levels on the habitat islands and during partial-storage, shallow-storage, or shallow-water wetland periods on the reservoir islands and in the NBHA (J)

Proposed Thresholds of Significance

- Any interference with emergency response plans or emergency evacuation plans (also see socioeconomics)
- Increases in mosquito habitat acreages that may result in increased mosquito populations
- An increase in populations of, or exposure to, other disease vectors
- Increases in exposures to pathogens, carcinogens or toxins
- Increase in the potential for flooding that would pose a threat to public safety

Land Use

Background

An objective of the Bay-Delta program related to land use protection is to manage the risk to losses of existing land uses from gradual deterioration of Delta conveyance and flood control facilities which could result in the catastrophic inundation of Delta Islands. This section correlates to Sections III.A and III.F.3 of the Draft PAV outline.

Local jurisdictions each have general plans accompanied by maps which prescribe appropriate land uses. Proposed developments must be consistent with the general plan of a community unless approval is obtained to amend it.

Review of Existing CEQA and NEPA documents

Agricultural

- Net loss of water deliveries to agricultural contractors resulting in net loss to cropland (A)
- Potential irrigation on lands outside existing or proposed place of use (additional acres) (B)
- Potential irrigation in Class 6 or unclassified lands (additional acres) (B,C,D)
- Impact any lands classified as prime and unique farmlands (C,E,F)
- Decrease in water quality (increased salinity) for agriculture (E)
- Unmaintained water levels during the irrigation season (F)
- Loss of use of agricultural land for one growing season (G)
- Planting orchards or vineyards, building structures, or constructing permanent improvements within the rights-of-way of pipelines (G)
- Agricultural land uses that become susceptible to flooding (H)
- Alterations to agricultural activity (I)
- Crop substitution effects on agricultural activity (I)
- Direct and cumulative conversion of agricultural land (J)
- Inconsistency with Contra Costa County General Plan Agricultural Principles (J)

Developed and Open Space Use

- Potential conversion of wetlands due to agricultural or urban development (additional acres) (B,C,D)
- Inconsistency with local plans and policies (C,D)
- Irrigation or urban development on lands outside existing place of use (C,D)
- Land acquisition and relocation (E)
- Displacement of property owners (G,J)
- Displacement of residences and structure on reservoir islands (J)

- Conversion of wetlands and upland habitat for levee construction (L)

Recreation

- Water level changes in reservoirs and lakes (A,I)
- Potential for significant propeller damage to boats from exposed hazards as water level drops (A)
- Exacerbation of conflicts between recreational user groups as water levels drop (A)
- Water level drops that impact boat launches (A)
- Water quality impacts to lakes that result in prohibition of swimming would be prohibited when coliform counts are high (A)
- Changes in recreation due to lower reservoir levels (B)
- Changes in recreation (per cent change in visitor-days) (B,D)
- Changes in refuge recreation (per cent change in visitor-days) (B,C)
- Land use impacts to refuges (C)
- Changes in lower American River recreation use (change in number of months between April and October with average flows of less than 1,500 cfs to 1,200 cfs,) (D)
- Impairment of channel depths needed to maintain navigation (E,F)
- Temporary closing of channels and rerouting due to construction (E,F)
- Increase in demand for public recreation in excess of supply (acres of land) (E,F)
- Change in available water surface area (E,F)
- Increased demand which exceeds supply of recreational facilities (F)
- Obstructed access to the aqueduct for recreational fishing due to flooding (H)
- Changed fresh-water flows in rivers and the Delta during the recreational season (I)
- Change in the quality of the recreational boating experience in Delta channels (J)
- Increase in recreation use-days for other recreational uses in the Delta (J)
- Increase in recreation use-days for hunting in the Delta (J)
- Change in regional hunter success outside the project area (J)
- Increase in recreation use-days for boating in the Delta (J)
- Changes in angler days (K)
- Alteration of recreational fishing (K)
- Changes of river temperature which reduce recreational swimming, tubing, canoeing, kayaking, and rafting (K)
- Changes to nature walk or sightseeing activities associated with fishery changes (K)
- Decreases in duck hunting success if Marsh allowed to become saline (L)
- Conversion of recreation facilities to other developed uses (L)
- Changes to vegetation species that reduce existing recreation potential (L)
- Increase in public access to private recreational facilities (L)
- Change to fishing opportunities (L)
- Loss of access rights to fishing ponds (L)

Proposed Thresholds of Significance

Agricultural

- Impacts upon any lands classified as prime and unique farmlands (also see socioeconomics)
- Conversion of agricultural lands or losses of croplands (also see socioeconomics)
- Inconsistency with agricultural objectives of local and regional plans
- Water level changes which would impact agricultural lands (also see socioeconomics)

Developed and Open Space Uses

- Displacement of residents (also see socioeconomics)
- Inconsistency with land use objectives of local and regional plans

Recreation

- Decrease in recreation use days or recreation potential for hunting, fishing, boating, swimming and other recreational uses (also see socioeconomics)
- Decrease in hunting and fishing success due to program impacts (such as increasing salinity or decreasing water levels) (also see socioeconomics)
- Increase in recreational demands which exceeds supply (also see socioeconomics)
- Decrease in navigation due to lowering water depths (also see socioeconomics)
- Decreases in water levels which could increase boating hazards and conflicts between recreational uses groups (also see public health and safety and socioeconomics)
- Impaired or reduced access to public recreation facilities (also see socioeconomics)
- Land use impacts to refuges (also see biological)

Socioeconomics

Background

As stated in Section 15382 of the CEQA Guidelines, "An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant." Social and economic changes will be used when judging whether changes in land use with economic impacts are significant. Thus, economics related to changes in land use effects may be considered significant.

This section correlates to the following sections of the Draft PAV outline: Costs Related to Flooding (III.B.2-4), Agricultural Economics (III.C), Municipal and Industrial Water Supply Economics (III.D), Commercial Fishing (III.H), Fish, Wildlife, and Recreation Economics (III.I), Regional Economics and Demographics (III.J), and Social Well-Being (III.L).

Review of Existing CEQA and NEPA Documents

Social Well Being

Social well being and environmental justice were not found as topics analyzed within any of the EIR/EIS's surveyed.

Economics and Demographics

- Retirement of irrigated cropland would create unemployment among farm workers and related agricultural businesses (A)
- Changed characteristics of the workforce (A)
- Changes in regional irrigation, and recreation earnings from baseline conditions (B)
- Changes in population (B,D)
- Changes in housing (B,D)
- Impacts to gross farm income (in dollars) (C)
- Impacts to employment income (in dollars) (C)
- Impacts to agricultural employment (in full-time equivalent jobs)(C)
- Impacts to recreational employment (in full-time equivalent jobs)(C)
- Increased employment growth in accordance with local plans (C)
- Increased population growth in accordance with local plans (C)
- Changes in economic benefits (C,D)
- Changes in regional irrigation and recreation earnings (D)
- Cost of options displaced and expected economic losses (E)
- A proposed water supply project which is considered to be growth-inducing because it results in an increase in population projections compared with what would have occurred without the project. (E,F)
- Population increase greater than the average housing vacancy for the area which would impact public services and utilities (G)
- A 25 percent reduction in water supplies which would have a significant economic impact on commercial and industrial firms (G)
- Reduction of cropland acreage which could affect local property taxes
- Changes to commercial fishing (K)
- Changes to sport fishing (K)

Proposed Thresholds of Significance

Economics and Demographics

- Inducement of increased populations which exceed the existing housing supply, infrastructure capacities and public services (see also Public Utilities/Infrastructure)
- Decreases in employment income and gross farm income, in dollars (see also Land Use)
- Loss of full-time equivalent jobs (See also socioeconomics)

- Losses to commercial fishing (See also socioeconomics)
- Changes in the characteristics of the workforce that induce changes in the community

Cultural Resources

Background

Identifying and evaluating important cultural resources involves archival and field surveys in the areas of archeology, ethnography (branch of anthropology involving the classification and description of indigenous cultures), architectural history, history and government landmarks. Assessing the significance of such resources involves an evaluation process whereby specific criteria are used as measurements of an individual resource's significance. Recognition of significant cultural resources occurs at the national, state and local levels. The Bay-Delta program involves lands subject to federal jurisdiction and /or is supported by federal funds. Therefore, for purposes of this document both federal and state requirements are described below. Local jurisdictions each have general plans, many of which include a listing of locally recognized historic resources. Jurisdictions that do not have specific historic preservation ordinances in place, will conduct archeological or historic surveys as part of the environmental analysis for specific development projects when potentially important or significant historic and cultural resources are known or suspected.

At the Federal level Section 106 of the National Historic Preservation Act (NHPA) set forth at 36 CFR 800, requires that every federal agency take into account how each of its undertakings could affect historic properties. Historic properties are defined as any property listed in or eligible for the National Register of Historic Places (NRHP). Such properties are considered significant. At the state level, the California Register of Historic Resources (CRHR) (draft regulations soon to be finalized) provides a parallel process to that of the Section 106 process for identifying and evaluating important resources. The principal difference between the two processes is that the CRHR places greater emphasis on local values in assessing the significance of cultural resources. Also currently in effect at the state level are the state CEQA Statutes and Guidelines, Appendix K, Section III, which define an "important" archaeological resource.

Review of Existing CEQA and NEPA documents

Listed below are sensitive and/or known cultural resources or potential cultural resources identified in documents reviewed for this report. Impacts to these resources could be considered significant project impacts. It is important to note that significant, undiscovered cultural resources have the potential to be affected by any of the alternatives being reviewed for the programmatic EIR/EIS. Some of the previously identified cultural resources may not be significant or important. Potential effects to potentially significant resources identified during the research are as follow:

- Fluctuating water levels and associated wave action which may increase erosion and expose submerged prehistoric resources (A)
- Changes in the number of cultural resources exposed by changes in reservoir level fluctuations (A, B, C, D)
- Impacts to cultural resources located in refuges (B, C, D)
- Disturbance of buried resources (if present) in the archaeologically sensitive Piper Sands on Webb Tract (J)
- Disturbance of intact burials on Holland Tract (J)
- Demolition of the NRHP-eligible historic district on Bacon Island (J)
- Damage or destruction of known archaeological sites resulting from inundation wave action and erosion, or project-related vandalism on Holland Tract (J)
- Disturbance of unknown resources on unsurveyed portions of Holland Tract (J)
- Damage to known and unknown prehistoric sites (J)
- Damage to identified and unidentified historic structures (J)
- Disturbance of archaeological site on Bouldin Island (J)

Proposed Thresholds of Significance

Once the significance/importance of a cultural resource has been established, the process of determining impact significance can begin. At the Programmatic EIR/EIS level of analysis potentially significant/important cultural resources have the potential to occur on lands affected under each of the alternatives. Absent site-specific information for each of the proposed alternatives to be analyzed under the Programmatic EIR/EIS, it must be assumed that the potential significance thresholds for each of the alternatives will be the same. The following thresholds of significance are proposed:

- Any activity which would disrupt or adversely affect a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site, except as a part of a scientific study;
- Any action which would conflict with established recreational, educational, religious, or scientific uses of the area.

Public Utilities/ Infrastructure

Background

CALFED Program alternatives could affect (1) energy production (changes to reservoirs resulting in hydropower impacts), (2) energy consumption (needed for implementing the program), and (3) energy infrastructure.

Changes to levees and channels could result in increases in the acreages of permanently flooded lands.

Program alternatives could also lead to increases in water supply opportunities that could be used for environmental purposes (e.g. in-stream flows, refuges) and consumptive use (e.g. irrigation, domestic water supply).

This section correlates to the following sections of the Draft PAV outline Flood Control System and Other Infrastructure (III.A), and Power Production (III.E).

Review of Existing CEQA and NEPA Documents

- Temporary disruption to utilities, such as gas and water supply lines, power and telephone cables, underground cables, and wells (E,F)

Power Production and Consumption

- Changes in energy used for groundwater pumping (B, C, D)
- Changes in annual project power generation (B, C, D)
- Changes in energy use or demand (C)
- Inefficient, wasteful, or unnecessary energy consumption (E, F, M)
- Increased power and energy requirements (E, F)
- Increase in demand above capacity requiring new facilities (G, M)

Power Supply and Demand

- Increase in the risk of rupture to gas lines crossing exterior levees (J)
- Inundation of electrical transmission utilities on the reservoir islands (J)
- Increase in PG&E response time to repair a gas line failure (J)
- Temporary relocation of power and utility lines or temporary disruption during construction (L)

Flood Control

- Risk of levee failures due to earthquake loads in the Delta (E)
- Earthquake shaking that has the potential to cause slope failures (E)
- Changes (increases or decreases) in 100-year flood stages (E)
- Increase in downstream flood stages (E)
- Regular flooding and associated deposition of asbestos fibers on existing and expanded retention basin land (H)
- A threat to Lemoore Naval Air Station's structure or function due to flooding (H)

Other

- Increase in demand for police services (J)
- Increase in demand for fire protection services (J)
- Increase in demand for water supply services (J)

Proposed Thresholds of Significance

Power Production and Consumption

- Inefficient, wasteful, or unnecessary energy consumption (see also socioeconomics)
- Increased energy use which could not be accommodated by existing or planned facilities (see also socioeconomics)

Power Supply and Demand

- Increased numbers of electrical transmission lines with resultant encroachment impacts
- Increase risks of rupture to gas lines crossing exterior levees
- Inundation of electrical transmission utilities
- Increase in utility response time to repair gas or electric lines

Flood Control

- Increases in 100-year flood stages

Water Supply and Uses

- Increases in demand for water supplies that could not be provided with existing or planned facilities (see also socioeconomics)

Air Quality

Background

This section addresses dust and smoke from agricultural activities, and potential emissions generated from construction and power plant facilities (pumping, or indirect impacts). These topics correlate to the Draft PAV outline, (II.H.1 and 2).

For the purpose of this programmatic document emissions associated with land disturbing activities, water pumping or hydropower generation will require compliance with federal, state and local air quality standards. Standards include two categories: criteria pollutants and toxic pollutants. Increased potential for exceeding these standards would be a significant impact.

Review of Existing CEQA and NEPA Documents

The following is a compilation of significant impact thresholds with the appropriate references:

- Increases in ground disturbances that result in increases in suspended particulate matter (A)
- Other adverse changes in local or regional air quality (A)
- Air quality impacted by trenching activities (G)
- Emissions from vehicles or construction machinery (G)
- Generation of dust in amounts damaging to surrounding areas (G)
- Short-term construction that may result in exceedance of local jurisdictions air pollution plans, or state or federal air quality standards (G)
- Increases in CO emissions during construction and project operations (J)
- Increases in ROG emissions during construction and project operations (J)
- Increases in NOX emissions during construction and project operations (J)
- Increases in PM₁₀ emissions during construction and project operations (J)
- Increases in the cumulative production of ozone precursors and CO in the Delta (J)

Proposed Thresholds of Significance

- The potential to exceed state, federal or local air district standards or thresholds of significance for criteria or toxic pollutants caused by changes in power plant generation, pumping, or indirect impacts
- The potential to exceed PM₁₀ emission standards caused by construction activities, and/or agricultural operations

Waste

Background

Under state law, each county must reduce and recycle solid wastes generated within its jurisdiction. The CALFED alternatives could produce materials from demolition of structures or excavations (e.g. levees or dredged materials that would require disposal or use). These materials may contain trace contaminants that would pose risks to the public.

The CALFED alternatives could also lead to impacts to sewage systems through: (1) modifications in sewage disposal, (2) physical changes to systems (i.e., relocations and/or demolitions), and (3) alterations of dilution ratios from existing sewer discharges caused by changes in flows.

Review of Existing CEQA and NEPA documents

- Increase in demand for sewage disposal services (J)
- Increase in demand for solid waste removal (J)

Proposed Thresholds of Significance

- Increases in demands for sewage disposal services which exceed existing or planned capacities (see also socioeconomics)
- Increases in demands for solid waste removal which exceed existing or planned capacities (see also socioeconomics)
- Increased risk to the public or biological resources from excavated material (see also public health and safety)

Noise

Background

The noise environment can be affected by a change in land use activities, growth leading to changes in traffic, construction, operation of new power plants or water pumping facilities, and general construction activities. Impacts would be associated with specific facilities or changes that affect the generation of noise. At the program level these impacts may not be definable.

Review of Existing CEQA and NEPA documents

- Temporary localized increased noise levels due to construction (E, F, G, K)
- Lack of compliance with federal, State and local noise laws and regulations (G)
- Operational noise louder than the ambient environment (e.g. adjacent highway noise) (G)
- Construction noise exceeding harmful thresholds (L)

Proposed Thresholds of Significance

Noise

- The potential to exceed applicable noise standards (operational facilities)
- The potential for noise increases beyond ambient levels where standards are already exceeded
- Increased construction noise in excess of levels permitted by federal, State and local laws and regulations

Transportation

Background

Transportation could be impacted in several ways:

- (1) Rerouting or disruption of transportation infrastructure

- (2) Changes to roadway levels of service, capacity, and traffic volumes
- (3) Changes to the need for roadway maintenance
- (4) Creation of new transportation infrastructure

Review of Existing CEQA and NEPA documents

- Changes in traffic that would not be accommodated on existing roadways (C)
- Inadequate access and parking for land-based recreation (E)
- Temporary increases in construction traffic, roadway relocation, reconstruction (E,F,K)
- Importing construction materials by truck that adversely impact traffic (F)
- Modifying and restoring roadways that cause traffic delays (F)
- Construction impacts at road crossings causing disruption of traffic (G)
- Increased numbers of commuting construction workers leading to significant traffic impacts (G)
- Changes in Flood waters that inundate highways (10-, 25-, and 100-year flooding) (H)
- Changes to structural integrity of county roads (J)
- Changes in ferry traffic (J)
- Increases in fog hazard on SR 12 (J)
- Increased traffic congestion due to increased recreational users (K)
- Road damage during construction caused by heavy equipment (L)

Proposed Thresholds of Significance

- Inadequate access and parking for recreational users
- Increases in traffic that could not be accommodated on existing roadways
- Flooding impacts to roadways
- Roadway damage caused by heavy equipment used during construction
- Loss or reduction of structural integrity of roads
- Inducement of occasional fog hazards on roadways impacting traffic safety

Visual

Background

Visual character and quality of land uses vary throughout the Bay-Delta area. Visual images of an area proposed for construction may be seen from recreational and other visually sensitive areas, transportation systems, and from other public areas. Impacts to visual resources depend on a variety of factors including contrast with the existing landscape, number and interests of viewers, and the magnitude of the visual impact.

This section correlates to the Recreation Use Section (III.F.3) of the Draft PAV outline.

Review of Existing CEQA AND NEPA documents

- Changes in Sacramento River, Shasta Reservoir, and Clair Engle Reservoir visual quality (B)
- Changes in refuge visual quality (C)
- Changes in Folsom Reservoir and American River visual quality (D)
- Short-term disturbances contributing to an unnatural appearance of the landscape and a degradation of visual quality to scenic lands due to construction (G)
- Long-term changes due to the presence of project structures to scenic lands depending on the location from which the project is viewed, number of viewers, scenic quality of the area, and existing disturbance in the area (G)
- Night lighting that would be intrusive (G)
- Loss of large oak trees especially on densely vegetated slopes (G)
- Potential conflict with the Scenic Designation for Bacon Island Road (J)
- Reduction in the quality of views from adjacent waterways and from the Santa Fe Railways Amtrak Line (J)
- Changes in views (J)
- Reduction in the quality of views from adjacent waterways, land, and island levees (J)
- Increase in viewing opportunities and quality of views of island interiors and the project vicinity for recreation facility members (J)
- Barren slopes due to levee construction could cause short-term impacts (L)
- New Montezuma Slough control structure gate would present an aesthetic impact in the structure area (L)
- Long-term effects from constructing new levees in areas previously without levees (L)

Proposed Thresholds of Significance

- Potential conflicts with Scenic Designations of any roadways
- Reduction in the quality of views or loss of viewing opportunities associated with vegetation, refuges, or recreational areas including waterways
- Addition or disturbances of structures resulting from program implementation that would contribute to an unnatural appearance of the landscape or degradation of the visual quality of scenic lands
- Addition of night lighting

DRAFT APPENDIX

Initial Review Draft Report

August 27, 1996



APPENDIX A

Reference List of CEQA Documents:

- (A) Science Applications International Corporation. 1995. Draft and Final Program Environmental Impact Report, Implementation of the Monterey Agreement, Statement of Principles by the State Water Contractors and the State of California Department of Water Resources for Potential Amendments to the State Water Supply Contracts. Santa Barbara, CA. Prepared for Central Coast Water Authority. Buellton, CA.
- (B) U. S. Department of the Interior, Bureau of Reclamation. 1988. Environmental Impact Statement, Sacramento River Service Area Water Contracting Program. Mid Pacific Region. Sacramento, CA.
- (C) U. S. Department of the Interior, Bureau of Reclamation. 1988. Environmental Impact Statement, Delta Export Service Area Water Contracting Program. Mid Pacific Region. Sacramento, CA.
- (D) U. S. Department of the Interior, Bureau of Reclamation. 1988. Environmental Impact Statement, American River Service Area Water Contracting Program. Mid Pacific Region. Sacramento, CA.
- (E) California. Department of Water Resources. 1990. Draft Environmental Impact Report/Environmental Impact Statement, North Delta Program. Sacramento, CA.
- (F) _____. Department of Water Resources and United States Bureau of Reclamation. 1990. Draft Environmental Impact Report/Environmental Impact Statement, South Delta Water Management Program - Phase I of Water Banking Program. Sacramento, CA.
- (G) _____. Department of Water Resources. 1991. Final Environmental Impact Report, State Water Project Coastal Branch, Phase II and Mission Hills Extension. Volume 1 and 2, Addendum 1-5, and Final Supplement. Division of Operations and Maintenance.
- (H) _____. Department of Water Resources. 1993. Draft Environmental Impact Report for Arroyo Pasajero Interim Standard Operating Procedure. Division of Operations and Maintenance.

- (I) _____. Department of Water Resources. 1993. Program Environmental Impact Report, State Drought Water Bank.
- (J) Jones & Stokes Associates, Inc. 1995. Draft Environmental Impact Report and Environmental Impact Statement for the Delta Wetlands Project. Sacramento, CA. Prepared for California State Water Resources Control Board, Division of Water Rights. Sacramento, CA.
- (K) U. S. Department of the Interior, Bureau of Reclamation. 1991. Planning Report/Final Environmental Statement, Shasta Outflow Temperature Control Shasta County, California. Mid Pacific Region. Sacramento, CA.
- (L) California. Department of Water Resources. 1984. Plan of Protection for the Suisun Marsh including Environmental Impact Report. Central District.
- (M) California. Department of Water Resources. 1986. Final Environmental Impact Report for Additional Pumping Units at Harvey O. Banks Delta Pumping Plant. Sacramento, CA.

Other References:

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- California. Department of Water Resources. 1992. Biological Assessment for South Delta Temporary Barriers Project. Biological Assessment for USFWS Section 7 Endangered Species Permit. Sacramento, CA.
- California. Department of Water Resources. 1995. Biological Assessment for the South Delta Temporary Barriers Project, 1996.

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